

Notice of Allowability

Application No.

10/664,565

Examiner

Seyed Azarian

Applicant(s)

MEISNER ET AL.

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1/26/2006.
2. ☒ The allowed claim(s) is/are 1-7,9, 11-13, 15-39 and 41-53, now renumbered as 1-49.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Applicants Attorney (John L. Knoble, Reg No. 32,387), on February 20, 2006, without traverse.
3. The application has amended as follows:

In the claims

Cancel claim 14, and amend claims 11 and 13 as follows: paper attach;

11. A method for augmenting reality, comprising steps of:

(a) tracking the position and orientation of a pattern of fiducials on an object with a self-contained, mobile system by scanning across the object to detect the fiducials, wherein a video run is formed by a scan and clumping video runs to detect the pattern of fiducials, wherein said
10 step of scanning across the object to detect the fiducials includes the steps of setting a
predetermined threshold voltage level for detecting a fiducial and identifying fiducial edges
when an output voltage from an optical sensor crosses the predetermined voltage level;

(b) processing virtual information stored in a computer memory of said system according to the position and orientation of the object; and

15 (c) presenting the virtual information with real information to a user in near real time with said system.

12. The method for augmenting reality of claim 11, wherein the pattern of fiducials are disposed on the object surface in a geometrically consistent hard fiducial pattern and in a pseudo random
20 soft fiducial pattern.

13. The method for augmenting reality of claim 11, wherein said step of tracking the position and orientation of the object further includes the steps of:

~~scanning across the object to detect the fiducials, wherein a video run is formed by a~~
25 ~~scan;~~

~~clumping video runs to detect the pattern of fiducials;~~

acquiring estimated values for a set of tracking parameters by comparing a detected pattern of fiducials to a reference pattern of fiducials; and

iterating the estimated values for the set of tracking parameters until the detected pattern
30 of fiducials match the reference pattern of fiducials to within a desired convergence.

Cancel claim 14.

REASONS FOR ALLOWANCE

1. The terminal disclaimer filed on 2/17/2006 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of U.S. Patent 6,625,299 has been reviewed and is accepted. The terminal disclaimer has been recorded and the double patenting rejection for claims 1-7, 9, 11-13, 15-39 and 41-53, there of is withdrawn.

Based on applicant's arguments, filed 1/26/2006, see page 12 through page 13 of remarks, with respect to claims 1-7, 9, 11-13, 15-39 and 41-53, have been fully considered and are persuasive and in view of the (**rule 131 declaration**), the art rejection of 35 U.S.C. 102(e) and 103(a) for claims 1-7, 9 and 11-13, 15-39 and 41-53 are hereby withdrawn.

2. Claims 1-7, 9, 11-13, 15-39 and 41-53, now renumbered as 1-49, are allowed.

The following is an examiner's statement of reasons for allowance.

Based on applicant's remarks, with respect to claims 1, 51 and 52, the closest prior art of (Hirota and Carollo) do not disclose or suggest, among other things, "acquiring estimated values for a set of tracking parameters by comparing a detected pattern of fiducials to a reference pattern of fiducials, and iterating the estimated values for the set of tracking parameters until the detected pattern of fiducials match the reference pattern of fiducials to within a desired convergence.

Additionally with respect to claims 11, 26 and 53, the closest prior art of (Hirota and Carollo) do not disclose or suggest, among other things, "determining a relative position and orientation of the sensor with respect to the object by comparing the locations of fiducials to a known reference pattern, providing virtual information to a user in substantial registration with real information based on the relative position and orientation determined in step, and wherein method is performed so as to provide said virtual information to said user in near real-time.

These key features in combination with the other features of the claimed invention are neither taught nor suggested by the art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu, can be reached at (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seyed Azarian
Patent Examiner
Group Art Unit 2625
August 2, 2005


KANJIBHAI PATEL
PRIMARY EXAMINER